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*A NEW PROFESSION*

THE following extracts from a paper entitled "Applied Biology, A New Profession," emphasizing the opportunities for men in sanitary engineering, public health work and municipal engineering was read before the Civil and Sanitary Engineering Section of the Alumni Convention at Pittsburgh, February 20, and the complete article can be found in the reports of the convention.

With increasing urbanization caused by the flux from the country districts to the cities and all the results which accrue from the consequent overcrowding and the extension to a greater number of people of an artificial mode of living, the chances for morbidity and mortality are greatly increased. To offset these conditions and to minimize these dangers, there has grown up in the last quarter century a new profession, sanitary science or preventive medicine, concerned with the prevention and control of disease rather than with cure, and as the proverbial "ounce of prevention" is still "worth a pound of cure" and as the increase of perplexing problems, which are the outgrowth of these constantly extending artificial conditions, is apparent, the new profession would be justified even if the brilliant deeds it has accomplished, during the few years it has been in existence, were unknown. Those of you who are interested in this work know of many instances in your own experience to corroborate my assertion. That this new field is entirely distinct from that of curative medicine and that it contains many problems which the ordinary physician is not fitted either by training or by experience to solve, is proved by the fact that our more progressive medical schools are offering a three-year post-graduate course to their students, in order that they may be properly qualified to cope with the problems of sanitary science.

The following extract from the health bulletin of one of our most progressive states further emphasizes this point. "The practise often followed of naming the leading practitioner as health officer is by no means indicative of a good choice. It is probably more often the reverse. A physician becomes a competent practitioner only after intelligent and arduous study of curative measures. The more successful he is the more he has specialized in his chosen work to the exclusion of those particular sciences that have to do with preventive measures."

For those of you who are interested chiefly in the engineering side of public health work, it is desirable to review the applications of biology to sanitary science, in order to make clear the great number of points at which this subject touches the welfare of humanity. There is, perhaps, no better way of doing this than by examining the curriculum of that institution which was a pioneer in this field and noting the practical applications of the various subjects therein contained.

First and foremost in this curriculum comes the course in general biology, which is the study of the physics and chemistry of living matter, and if our thesis is that we are trying to improve human living conditions and better the environment of mankind in general, what better way is there of approaching a solution of this difficult problem than by studying the simpler forms and their correspondingly simpler reactions to changes in their environment? And what subject more fundamental could be imagined than that one, which from its very name means the study of living things?

An independent piece of research work, a thesis, is also required and this tends to develop the resourcefulness of the individual when he is thrown upon his own responsibility. To the pragmatist, who claims that the work of the investigator in pure science has no practical value, it is but necessary to point out there is only a very little research that sooner or later does not meet with a practical application; the pure science of to-day becoming the applied science of to-morrow. On completion of this course, the student in biology has a four-fold possibility before him: first, openings in the various fields of public health work; second, positions in the fermentation industries; third, teaching positions, either in biology or its practical applications; fourth, an opportunity to build upon this excellent foundation a medical education.

The supply of persons properly trained to teach biology, especially its applications to public health work and of those adequately equipped to occupy field positions, is far below the demand. One finds in many of these positions, incompetent men; men who are not fitted by either training or experience to solve problems related to the public health in a sound, rational, scientific manner, but who work by some rule of thumb method or dispose of their problems in a manner similar to that of the alchemists of the middle ages. It is true

that there are many unsolved questions in this nearly virgin field, and because of this and for the further reason that our cities still continue to enlarge, thus increasing our needs for sanitation, the opportunities in this field, especially in our rapidly growing west and middle west, are legion and because of these facts advance in most of the positions is comparatively rapid. This training enables a person to guide in a scientific manner such important movements as tuberculosis control, the establishment of milk depots, school inspection, the proper collection of vital statistics, proper housing, public health organization, in fact any question dealing with or intimately associated with matters pertaining to the conservation of life.

In this new field, we find sanitary biologists, sanitary engineers and sanitary chemists working together for a solution of such problems as providing a safe water supply and sewerage system, controlling epidemics of disease, enforcing proper care in the handling of food materials, in short, attempting the best solution of the particular public health problems which confront any given community.

There is no subject of greater interest to people in general than that of their own health and they recognize that this is closely related to questions of public health, for on the subject of disease and death we all meet on common ground. Because of this interest, the subject is much discussed, and it is not surprising to find much misinformation afloat because persons often appoint themselves authority pro-tem in social gatherings, and give decisions which have no background of fact or wisdom. A short time ago I heard from a reliable source that a man in a public health position said that typhoid carriers could be detected by blood cultures and from another "authority" came the statement that a T-bone steak, in the bottom of a well, was responsible for an outbreak of typhoid fever which occurred in the community in which the well was situated. Later I received a graphic description of how hordes of typhoid germs sallied forth from the carcass of a horse which was in a river bed, and calmly awaited unsuspecting persons drinking from the stream.

Unscrupulous persons, either in their desire for publicity or in order to "grind an axe" of their own, take advantage of this desire on the part of the public to be informed on health matters, by uttering half-truths or deliberately trifling with facts, to such an extent that wrong ideas gain

ground and it takes much time to eradicate these false impressions. By such unscrupulous persons, the march of progress is materially hindered. Politicians and others with no knowledge of public health matters and not appreciating the gravity of their deeds sometimes depose good men or so curtail their powers that they are unable to discharge their duties efficiently or to serve the best interests of the community.

It is over a half century since the theory of spontaneous generation or abiogenesis was finally overthrown, and while no one at the present time believes that eels can arise de novo from mud and slime or that mice can be generated from dirty flannel and corn, the idea is still current that decaying material and the consequent evil odors; poor plumbing; the "catching" of cold; etc., per se provide a suitable environment for generating disease-producing microorganisms. Nothing could be further from the truth, for a study of biology teaches us that between the living and non-living world we have one of the best defined barriers in nature, and that no living material, not even the humblest bacterial cell, comes into existence without the intervention of preexisting life of the same type.

Again quoting from one of our monthly state health bulletins: "Removing health departments from politics; selecting the right man, paying him the right salary, and permanent tenure of the position will do much to correct existing evils. There is no official of more importance to any community than a conscientious and capable health officer. The conserver of the health of our people is a benefactor of the race and worthy of the highest honors in the gift of the state."

In closing allow me to quote Disraeli and express my strong sympathy with his ideas: "The public health is the foundation on which reposes the happiness of the people and the power of the country. The care of the public health is the first duty of a statesman."

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#### *THE SECOND PAN-AMERICAN SCIENTIFIC CONGRESS AND ITS SECTION OF ANTHROPOLOGY*

In accordance with the resolutions of the First Pan-American Scientific Congress, held in Santiago, Chile, December 25, 1908, to